TECHNICAL REVIEW DOCUMENT
For
Significant Permit Modification to
OPERATING PERMIT 96OPJE140

to be issued to:

Coors Brewing Company
Golden Business Unit
McIntyre Commodities Transload
Brewing and Packaging Operations
Valley Support Services
Jefferson County
Source ID 0590006

Cathy Rhodes
February, 2004

I. PURPOSE:

This document will establish the basis for decisions made regarding the applicable requirements, emissions factors, monitoring plan and compliance status of emission units covered by the operating permit proposed for this site. It is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. This narrative is intended only as an adjunct for the reviewer and has no legal standing. The conclusions made in this report are based on information provided in the original application submittals of December 3, 2003 and February 10, 2004.

Any revisions made to the underlying construction permits associated with this facility in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or an additional or revised Construction Permit.

II. SOURCE DESCRIPTION:

This facility produces malt beverages, and is classified under the Standard Industrial Code 2082.
This facility is located in Golden, Jefferson County. The area is classified as attainment/maintenance for ozone, carbon monoxide, and particulate matter less than 10 microns in size (PM_{10}) Under that classification, all SIP-approved requirements will continue to apply in order to prevent backsliding under the provisions of Section 110(1) of the

Federal Clean Air Act. There are no affected states within 50 miles of the facility. There are two Federal Class I areas within 100 kilometers of the facility: Rocky Mountain National Park, and Eagle's Nest National Wilderness Area.

Facility wide emissions (except not including Rocky Mountain Metal Container nor TriGen emissions) are as follows (tons/year):

Pollutant	Actual	Potential
Particulate Matter (PM)	37	46
PM_{10}	20	28
Volatile Organic Compounds (VOC)	398	470
CO	7	58

Actual emissions are based on 1999 and 2000 data. Potential emissions are based on Operating Permit limits, which are based on 1999 and 2000 data.

This source does not emit major amounts of Hazardous Air Pollutants.

Total emissions from the Coors Brewery Complex, Rocky Mountain Metal Container, and TriGen Colorado Energy Corporation are as follows:

Pollutant	Potential	Actual
Particulate Matter (PM)	3573	74
PM_{10}	1256	56
Nitrogen Oxides (NO_x)	3722	1612
Volatile Organic Compounds (VOC)	1058	547
CO	687	210
Sulfur Dioxide (SO_2)	7223	2832

The Operating Permit contains a permit cap. Under the cap, Coors is able to "move" actual emissions from all equipment existing at the facility at their discretion, provided the permit limits are not exceeded, and all other existing applicable requirements are met. Colorado Regulation No. 3, Part A, IV.C provides for permit caps.

Note that some VOC emissions from the brewery are sent to the Tri-Gen power plant for destruction. The Coors Brewery complex, Rocky Mountain Metal Container, and the Tri-Gen plant are considered to be a single source for PSD purposes.

III. DESCRIPTION OF REQUESTED MODIFICATIONS

On December 3, 2003, the Division received an application to incorporate modifications that were previously made to Construction Permit 01JE0261 into the operating permit.

A. Modification 1 to the Construction Permit involved modifications to the waste beer condenser (P340) to eliminate carbon dioxide buildup and increase condensing capacity. Potential VOC emission increase is less than 40 tons/year (uncontrolled emissions are 34.08 tons/year), however, the modification is subject to a case by case RACT determination, therefore the modification qualifies as a significant permit modification for operating permit purposes.

New Applicable Requirements:
RACT for this source was determined to be destruction in the Tri-Gen VOC duct.
The permittee requested that the facility wide VOC emission limit not be increased for this modification.

Emission Factors: Stack Test: Air Pollution Testing, October 2, 2001

Monitoring Plan: Must follow the current monitoring method for the VOC duct that was in the original operating permit.

B. Modification 2 to the Construction Permit involved the addition of a new malt cleaning surge bin and associated conveyors and control equipment to Malthouse Grain Handling (P120). Potential PM/PM_{10} emissions are less than significant thresholds (2.95/1.64 tons/year uncontrolled), however, the modification is subject to a case by case RACT determination, therefore the modification is subject to the significant permit modification procedures for operating permit purposes.

Applicable Requirements: This source is subject to the opacity and PM emission limits currently in the permit. The RACT requirement is added to the permit. The Division has determined that the baghouses represent RACT for this source.

Emission Factors: AP-42, Section 9.9.1 (5/98) Grain Elevators and Grain Processing – factors for Headhouse and internal handling emissions used.

Monitoring Plan: Monitoring for opacity and PM emission limits are as in current permit. Monitoring for RACT is a baghouse operation and maintenance plan.

C. Modification 3 to the Construction Permit involved updates to the equipment list:
51 ink jet printers instead of 47 video jet printers
One keg filling machine instead of 3
Twelve can filling machines instead of 13

In addition, modification was made to extract grain separation (P240). Two existing filter presses were replaced with presses of the same capacity. One of the old presses is now used as a swing press (to be used when another press is down for cleaning). Additional

emissions result from the additional press (3.33 tons VOC/year). The permittee requested that the facility wide limit not be revised due to this modification.

New Applicable Requirements: RACT for this modification is "no control," as currently required in the operating permit.

In addition, a vertical fermenter was added to fermenting (P210). Potential emissions are less than 40 tons/year VOC (3.59 tons/year uncontrolled), however, a case by case RACT determination subjects this modification to the significant permit modification procedures. The permittee requested that the facility wide limit not be revised due to this modification.

New Applicable Requirements: The Vertical Fermenter is subject to a case-by-case RACT determination. The Division has determined that the Tri-Gen VOC duct represents RACT for this source.

Emission Factors: Stack test, November, 1995

Monitoring Plan: This unit is subject to the monitoring requirements for the VOC duct currently in the permit.

Finally, a new baghouse was added to the dry byproduct pellet system, to improve the air balance in the baghouse system, and as backup to two existing baghouses. Two baghouses were installed to replace aging equipment and improve the air balance in the baghouse system for malthouse grain handling. No change in emissions occurred.

D. The Construction Permit included the existing pretreatment flare (PWT230). This unit is added to the operating permit.

Applicable Requirements:
Emission limits for NOx and SO_2 (added to facility wide emission limits)
Regulation No. 1, II.A.5 – 30% opacity limit
Regulation No. 6, Part B, VII – Standards of performance for incinerators
The Division has determined that Regulation No. 6, Part A, Subpart E does not apply, because the flare does not incinerate solid waste.

Emission Factors: AP-42, Section 13 – Since the biogas consists primarily of methane, the emission factors used for VOC and PM are derived from natural gas consumption corrected to the heating value of biogas.

Monitoring Plan: Records of the amount of biogas flared and hours of use are kept to monitor compliance with the NOx and SO_2 emissions limits. In the absence of credible evidence to the contrary, compliance with the opacity limit and incinerator PM emission limit is assumed when biogas is destructed in the flare.

E. The permittee upgraded the Waste Water Treatment Plant, resulting in a reduction in ozone emissions. No new applicable requirements resulted from this change. Appendix I is updated to reflect new emission factors for ozone.

F. The December 3, 2003 application also requests a change in the method of calculating emissions from the spent grain dryers, and a corresponding increase in the facility wide VOC emission limit.

The current emission factors are based on a 1991 stack test, and the amount of packaged beer produced at the facility. At that time, all of the facility spent grain was dried, and there was a direct relationship between beer production and the amount of dried spent grain. In recent years, the permittee has begun to sell more wet spent grain and has reduced the amount of grain that is dried (therefore there is no longer a direct relationship between production and the amount of dried grain).

Coors performed stack tests in July and August of 2002 to develop emission factors based on tons of dry grain. The amount of dried grain is not directly tracked, however, the amount can be calculated based on production of dry byproduct pellets.

The current facility wide VOC emission limit is based on the average actual emissions for 2001 and 2002. Actual emissions for these two years were recalculated using the new VOC emission factor. This calculation indicates the facility wide emission limit should be increased by 19.6 tons/year. No other revisions are made to existing applicable requirements, and no new applicable requirements are added to the operating permit due to this modification. This modification qualifies as a minor permit modification.

G. Modification 4 to the Construction Permit upgraded and replaced some existing equipment at the facility. The modification qualifies as a significant permit modification for Operating Permit purposes because the new hammermills and modified brewlines and grain separator are subject to a case by case RACT determination. The following changes will were made at the facility.

Raw Materials Batching (P150)
Replace three existing roller mills in the north complex with three hammermills. Each hammermill is vented to a new bagfilter.
Add three new conveyors.
Only two of the three hammermills will operate at any one time. (Emissions are based on total potential annual grain throughput)

Brewhouse (P230) – Brewlines E, F, G and YH
Remove two malt mash-in and four cereal mash-in vessels
Replace all other vessels (mash tun, cereal cooker, and brewkettles) in each brewline

Increase brew size from 485 to 540 barrels
Increase average boil-off rate from 5% to 8%

Extract Grain Separation (P240)
Replace existing Brewline E and F mash filter presses with new mash filter presses

Emission Factors:
Hammermills: AP-42 – Section 9.9.1 – (5/98) Grain Elevators and Grain Processing
0.0138 PM/ton grain
0.0126 lb PM_{10}/ton grain
(This is the same factor used previously in the Operating Permit for roller mills)
Brewhouse: Source testing at Coors Brewery (November, 1990) with adjustment for increased boil off rate (linear increase)
This factor is applied to Brewlines A, B, C, and D also, therefore future emission calculations will be conservative The source test factor is the same factor used previously in the Operating Permit.
1.66 lbs VOC/1000 barrels
Extract Grain Separator: California Air Resources Board October 1983. The source test factor is the same factor used previously in the Operating Permit.
0.63 lb VOC/1000 barrels

New Applicable Requirements:
Regulation No. 3, Part B, IV.D.3.e(i) RACT for PM_{10} The Division has determined that operation of the Raw Materials Batching and Materials hammermills using the bagfilters represents RACT for this source.
Regulation No. 7, II.C.2, RACT for VOC The Division has determined RACT to be "efficient process operation" for the brewlines. RACT is determined to be "no control" for the extract grain separator. This is consistent with determinations in the RBLC and with a recent BACT determinations made for the Anheuser Busch brewery in Fort Collins, CO. This determination applies to the modified lines E-H. Lines A-B remain subject to the previous RACT determination (no control).
The applicant has requested that the current facility-wide emission limit not be revised due to this modification.
The equipment list is revised to incorporate these equipment changes.

Monitoring Plan: The applicable requirements except for the case by case RACT determinations are already in the operating permit. Monitoring for these new and replaced units remains the same as in the current permit. The hammermilll baghouses are subject to operation and maintenance requirements. For Brewing, operating procedures to ensure efficient process operation must be in written form and followed by brewery personnel.

H. Modification 5 to the Construction Permit was made to replace malt loadout equipment. The replacement system has a larger capacity than the replaced system.

Emission Factors:
3.3 lbs PM/PM_{10} per ton of grain handled

New Applicable Requirements:
Regulation No. 3, Part B, IV.D.3.e(i) RACT for PM_{10} The Division has determined that operation of the loadout using the bagfilters represents RACT for this source.
The equipment list is revised to incorporate these equipment changes. Section II, Condition 4 incorporates the RACT requirements.

Monitoring Plan: The applicable requirements except for the case by case RACT determinations are already in the operating permit. Monitoring for these new and replaced units remains the same as in the current permit. The baghouses shall be operated in accordance with good engineering practices.

I. Construction Permit modification 6 was made for addition of a belt filter press to the sludge handling operations at the wastewater treatment plant.

Emission Factors:
VOC emissions from April 29, 2004 emission test data.

New Applicable Requirements:
Regulation No. 7, II.C.2, RACT for VOC The Division has determined RACT to be "no control" for this source. – Section II, Condition 3.22 is revised accordingly.
The equipment list is revised to incorporate these equipment changes.

Monitoring Plan: The permit already includes monitoring requirements for VOC RACT sources.

J. Construction Permit modification 7 allowed the use of liquid adjuncts instead of starch and rice in the brewing process. The capability to use starch and rice will be maintained. Equipment associated with receiving, storing and transferring liquid adjuncts are not emissions sources. The use of liquid adjuncts increases the potential amount of malt produced and handled at the facility, and the final volume of each brew increases. Emissions from the following emission units are affected: Malthouse grain handling; Malting (P130); Malt House Grain Handling(Raw Materials Milling and Batching(P150); and Wort Processing (P250).

Emission Factors:
Wort Processing: 0.18 lb/1000 barrels packaged
Malting: 0.045 lb PM/ton barley; 0.027 lb PM_{10}/ton barley; 0.9 ton malt/ton barley x 22 tons VOC/1,000,000 tons malt
Raw Materials Milling and Batching: 3.0 lbs PM/PM_{10}/ton grain (Uncontrolled)

Malthouse grain handling: Various – See Appendix C of permit
(These are the same factors used previously in the Construction Permit and Operating Permit) Wort Processing: 0.18 lb/1000 barrels packaged
Malting: 0.045 lb PM/ton barley; 0.027 lb PM_{10}/ton barley; 0.9 ton malt/ton barley x 22 tons VOC/1,000,000 tons malt
Raw Materials Milling and Batching: 3.0 lbs PM/PM_{10}/ton grain (Uncontrolled)
Malthouse grain handling: Various – See Appendix I of permit
(These are the same factors used previously in the previous Operating Permit)

New Applicable Requirements:
Regulation No. 3, Part B, III.3.a(ii): RACT for PM_{10} and VOC.
VOC RACT:

Malting: good operating practices – Section II, Condition 3.24 is added
Wort Processing: good operating practices – Section II, Condition 3.5 already includes this requirement

PM_{10} RACT:

Malthouse Grain Handling: the use of baghouses represents RACT for all sources at the grain handling facility.
Malting: no add on control.
Raw Materials Milling and Batching: the use of baghouses.
Section II, Condition 4 incorporates these requirements

Monitoring Plan: Good operating practices will be committed to written form and available for personnel, as already required in the permit. Baghouses shall be operated in accordance with good engineering practices as already required in the permit.

K. Construction Permit modification 8 was a major modification for PSD purposes for changes made to the packaging lines at the Brewery . Installation of a new 16-oz. plastic bottle line (8-bottle line). Installation of a new keg filling line. Optimization of the 7-bottle line to increase the maximum filling capacity. These changes resulted in emissions increases from the bottle label glue and the packaging videojets units.

Emission Factors:
Bottle filling lines: 37 lb VOC/1000 bbls beer packaged (Source Testing)
Keg filling line: 0.71 lb VOC/1000 bbls beer packaged (Source Testing)
Videojets: Mass balance (worst case 90 lbs VOC/100 lbs ink)
Bottle Label Glue: Mass balance (worst case permit limit of .2636 lb VOC/100 lb glue
(These are the same factors used previously in the Operating Permit)

New Applicable Requirements:
Regulation No. 3, Part D, VI.A.1 - Best Available Control Technology (BACT) for VOC
Bottle filling lines: Pollution prevention plan

Keg filling line: Good operating practices
Videojets: Pollution Prevention
Bottle Label Glue: good operating practices, including a maximum VOC content of 0.2626%
Section II, Condition 8 is inserted into the permit, and all subsequent conditions are renumbered.

Monitoring:
Records of the VOC content of the glue shall be maintained for Division inspection upon request. The permittee shall commit good operating practice and pollution prevention procedures to a written format for personnel reference, and shall make them available for Division inspection upon request. A pollution prevention plan will be developed for the bottle filling lines, and will include minimization of product loss, including product loss tracking and monitoring; maintenance schedule; fill-techs to monitor bottle fill level; and operator training

The equipment list in Appendix G is revised to reflect these Construction Permit modifications.

IV. Construction Permit Final Approval
The due date of the first semi-annual monitoring and deviation report required by this operating permit will be more than 180 days after the initial approval modifications of Construction Permit 01JE0261 was issued and/or the equipment commenced operation. For some of the modifications, the source has demonstrated compliance under the provisions of Regulation No. 3, Part B, Section III.G.2, but not yet received a final approval construction permit. Therefore, under the provisions of Regulation No. 3, Part C, Section V.A, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect. The appropriate provisions of the initial approval construction permit have been incorporated into this operating permit.

V. Other Permit Modifications
Section II, Condition 2.4 is revised to clarify that the scrubbers on at the spent grain dryers are subject to the weekly opacity monitoring requirement.
Section II, Condition 3 – Revise Regulation No. 7 cites to reflect latest version
Section II, Condition 3.24 is revised to clarify the frequency of the required annual analyzer tests.
Section II, Condition 3.26 is revised to reflect that “good engineering practices” must be used, in accordance with EPA comments regarding previously issued operating permits.
Section II, Previous Conditions 7 and 8 – These conditions are deleted. Condition 7 dealt with insignificant activities. The semi-annual and annual compliance reports include compliance with insignificant activity requirements, therefore this specific condition is not needed. Condition 8 dealt with report deadlines. Deadlines for reports are indicated throughout the permit, therefore this condition is not necessary.
Section IV – Update to include latest version of general conditions. Condition 3.d was modified to replace “upset” with “malfunction” and clarify that an affirmative defense is

available (required due to changes to the Common Provisions Regulation effective 3/7/2007).
Appendix B & C modified to reflect current language. The term “upset” was replaced with “malfunction”.
Appendix D – the mailing address of EPA was updated.

VI. Compliance Assurance Monitoring (CAM)

The requirements set forth in 40 CFR Part 64, as adopted by reference into Colorado Regulation No. 3, Part C, Section XIV, require emission points that use a control device to meet an emission limit or standard, and which have pre-controlled emissions equal to or greater than major source thresholds to submit a CAM plan. Sources for which a Title V application was deemed administratively complete prior to April 20, 1998 are not subject to the CAM requirements until renewal or if a significant permit modification is made that affects a large unit. The application for this facility was deemed complete prior to April 20, 1998, therefore the CAM provisions did not apply for the original Operating Permit. The following units are subject to this signficant permit modification because of case by case RACT and BACT determinations:

P120 – New Malt Cleaning Surge Bin & Malt House Grain Handling (baghouse)
P130 – Malting (baghouse and no add on control)
P150 – Raw Materials Milling and Batching – (baghouse)
P210 – Fermenting – Vertical Fermenter (VOC duct)
P230 – Brewing (efficient process operation)
P240 – Extract Grain Separator (no control)
P250 – Wort Processing (good operating practices)
P340 – Waste Beer Condenser (VOC duct)
P410 – Bottle Filling Lines: 8-Bottle Line and 7-Bottle Line (pollution prevention)
P425 – 4-Keg Filling Line (good operating practices)
P470 – Packaging Video Jets (pollution prevention)
P495 – Bottle Label Glue (good operating practices)

Per 40 CFR Part 64.5:
“Large pollutant-specific emissions units. For all pollutant-specific emissions units with the potential to emit (taking into account control devices to the extent appropriate under the definition of this term in 64.1) the applicable regulated air pollutant in an amount equal to or greater than 100 percent of the amount, in tons per year, required to be classified as a major source, the owner or operator shall submit (a CAM plan) at the following times:

On or after April 20, 1998, the owner or operator shall submit information as part of an application for a significant permit revision under part 70 or 71 of this chapter, but only with respect to those pollutants for which the proposed permit revision is applicable.”

None of the units listed above is a large pollutant specific emissions unit (all controlled potential emissions are less than 100 tons/year for each unit), therefore, the CAM provisions do not apply at this time. (P230 and P240 do not use add on control devices.)

At time of permit renewal, the permittee will be required to submit CAM plans for any units which use an add on control device to meet an emission limit, and for which emissions without control are greater than 100 tons/year. (At that time, a determination can be made if any equipment is inherent to the process, rather than an “add on control device.”)